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AUTHOR Dhanarajan, Gajaraj
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ABSTRACT

This paper explains how worldwide economic, social, and technological changes are necessitating changes in the way vocational education is delivered. Vocational programs are encountering a whole new range of clients, including the following: people who are functionally illiterate, physically challenged, or long-term unemployed; out-of-work youth; women and girls; refugees and immigrants; and nonnationals. Technology must play a greater role in the delivery of vocational education for many reasons: short supply of teaching talent; worldwide unmet demand for training; changing patterns of learning; increasing need for just-in-time training as the pace of change in the workplace continues to accelerate; information explosion; and ever-changing nature of learning technologies. Moreover, advances in communication have made distance education more feasible than ever and enabled small, specialized providers of educational services to compete with large providers and offer their services globally. Individuals responsible for planning the delivery of vocational education must face six challenges: reorient teachers and pedagogy; change the nature and structure of teaching organizations; remove the "time-driven" element from today's educational institutions; overcome faculty fears regarding their changing roles; develop appropriate curricula; and increase learners' access to technology. Perhaps the biggest challenge is to create pedagogies of learning within which modes of delivery will contribute to effective learning. (MN)

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Delivery of Training Programs: Changing Design

by

Gajaraj Dhanarajan
(President, The Commonwealth of Learning, Vancouver)

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I am entirely certain that 20 years from now we will look back at education as it is practiced in most schools today and wonder that we could have tolerated anything so primitive (**John W. Gardner**). Professor Gardner, a former US Secretary of State for Health and Education and Professor at Stanford University, may be a little provocative in his prediction, but as we near the end of this century, and given all that we know about the ways in which technology is influencing the learning environment, it would be difficult not to show some association with these sentiments. With a few *exceptions*, education, as it is currently practised, has undergone little change from the traditions of some nine centuries ago. Yet, there is a strong body of evidence and advocacy that is emerging, and which argues for these *exceptions* to become more common place than the current situation. This presentation will attempt to look at the reasons behind the clamour and consider the requirements for, as well as the response of, the academic and training communities to the change.

2. The provision for learning is becoming more open and accessible. Many factors contribute to this changing educational culture. Important among these are the forces of economics, social and technological. These forces are worldwide in

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their scope and, in terms of their power, seem to have a profound impact on business practises, manufacturing processes, financial services, government policies and, more recently, in our teaching practises and learning behaviours. It would not be an exaggeration to say that as we approach the end of this century, we are also moving irrevocably in the direction of changing the way we think about information, knowledge and learning.

3. In addition to the environmental change, there is also a change in the nature of those requiring education and training. Communities are no longer contented (nor should they be) to limit access to education and training to the fortunate few who are able, literate, live in urban communities, have access to communications, infrastructure and classrooms, the knowledge of when, how and what to learn and the resources to pay for them. A fairer, kinder and more concerned humanity requires that the education we provide must be made available to a whole range of new clients including:

- **Those who are functionally illiterate**: Apart from about 900 million illiterates globally, there are almost half as many adults who cannot cope with the demands of daily life on the basis of their prior literacy levels.
- **The physically challenged**: Annually, on the continent nearest to you (Asia), about 15 million people become disabled as a result of war, diseases, accidents and malnutrition. Their major hope of self-improvement is to pick up skills for self-improvement.
- **The long-term unemployed**: Long-term unemployment is a debilitating pathology; training people in such situations pose special challenges to delivery and pedagogy.

- **Out of work youth**, especially boys: require vocational training to be part of a productive economy. A combination of apprenticeship, employment and self-education need to be designed to assist them. This group is highly vulnerable to socially disruptive behaviours.
- **Women and girls**: In many parts of the Commonwealth, women and girls still find themselves marginalised from participating in education and training; ways may have to be found to circumvent the social, cultural and economic impediments.
- **Refugees, recent immigrants and non-nationals**: Today, roughly 125 million people live outside their countries of origin. This flow of people for political, social or economic purposes is not expected to slow down. To better enable the process of settling down, educational programmes, teaching language, social and job skills have to be designed and delivered.

4. Apart from the social concerns, individuals and governments are beginning to recognise that planning for "competitive advantage" will require a labour force that has literacy and numeracy skills beyond three to six years of primary schooling (which is the current situation in most industrialised and newly industrialising countries, it is grimmer in all other developing nations). Globally, some two billion people who are in today's workforce will continue to be there well into the first quarter of the next century. Their knowledge and skills will need continuous renewal. To this, we need to add a further one billion young children and adults who will require initial education and training. The level of supply (or lack) of education and training for this huge demand for initial, continuous and lifelong education using present patterns of delivery are, in the words of the much respected Vice Chancellor of the United Kingdom Open University, Sir John Daniel, *at a crisis point*. The challenge of providing education and training to a huge and diverse population with

a variety of learning goals and styles, at an acceptable cost, will require new forms of educational delivery, globally. Notwithstanding the scepticism of many in the academic community, recent reports from agencies such as UNESCO, the Organization for Economic Cooperation and Development and the World Bank seem to say as much. In some ways, the emergence of the new technologies may have something to do with the push to drastically change the nature of the learning environment.

5. In North America, the arrival of the newer technologies certainly seems to have stimulated a resurgence of interest in diversifying methods of knowledge delivery. Almost on a daily basis, one is told that yet another web-based course is available from one university or another. Newer technologies or not, this audience is familiar with the successes of many Commonwealth institutions which took the challenge of providing good quality, mass, flexible and lower cost education for remote learners at the basic and primary (such as the Correspondence School of New Zealand), secondary (as delivered by the National Open School systems of India), technical (presented by the Open University of Sri Lanka), under-graduate (by the Open University of Hong Kong) and post-graduate (through the UKOU and the Indira Gandhi National Open University) levels.

6. Any transformation of the educational system cannot ignore a role for technology in the delivery of that education. There are several reasons why this is so, but a few stand out as immensely important. These are:

- **The short supply of talent:** On one hand, the planet is filled with highly skilled and talented people in all fields of human endeavour. On the other, critics of global educational systems have constantly bemoaned the fact that, by and large, the academic talent found in our schools, colleges and universities need to enhance the quality of the learning environment beyond levels of mediocrity. We need excellence in our teaching and we

need to source our teachers from the best in the community and distribute them to the whole learning community. The Western Governors Virtual University initiative among the North Western States of the USA is, in fact, attempting to do the same thing. This attempt envisages going beyond campus walls to source academic "teaching" talent. Contributors to courses will come from business, commerce, industry and government, and users of the courses will include ordinary people along with thousands of college and university students. This can happen because there is the courage and willingness to use the technological tools of today.

- **An unmet demand:** Since the end of the last World War, the planet has expanded its educational provision at all levels. While in proportionate terms, we congratulate ourselves for having achieved near universal basic, primary and more secondary and post-secondary education in sheer numbers, the number of people still needing education at all levels is astronomical. To be a globally competitive economy, the renewal of peoples' knowledge, especially those in the workforce, is vital. If we also include our desire to build a nation of informed and knowledgeable citizenry for the functioning of a healthy democracy, then this planet's demand for educational opportunities is truly staggering. No conventional system of educational delivery can meet this demand. Using technology may provide some relief, and using technology in partnership with others may provide lots of relief.
- **Changing patterns of learning:** Full-time study within time-tabled constraints of the classrooms is only accessible to a few; for many who wish to study, learning will have to occur at a time and place of their choice. The growth of open schools, polytechnics and universities as well as the numerous suppliers of correspondence and on-line education

are all manifestations of peoples' desire to learn at their convenience rather than at an institution's call.

- **Just in time training:** The rapid changes that are taking place in the workplace will require training to be delivered quickly. Such training need to be high speed, low cost and should reach small and large groups. Traditional ways of delivering training is time consuming, labour intensive, socially disruptive and entails high cost.
- **Information explosion:** It is said by those who study this area, that the total amount of information which becomes available doubles every four to five years. Stating it another way, the total of all human knowledge that was available to an undergraduate in 1997 will be less than 1% of what will be available to a student in the year 2050. Teachers have to become expert in helping learners navigate through this sea of information rather than pretending to be effective transformers of that information into knowledge for the learners. Students must be trained to bring about this transformation. Those who survive this information explosion will be able to deal with it effectively, and more importantly, turn it into knowledge.
- **The ever-changing nature of learning technologies:** The technologies that are emerging and predicted to emerge are friendlier, faster, cheaper, more accessible and will have greater capacity. Programme developers need not possess complex computing skills – the machines will. Willing teachers, supportive administration and motivated learners can together create a learning environment that is open, interactive and challenging.

7. There are other factors as well, that support the case for greater use of technology in delivering education. Frances Cairncross, in her recent book entitled ***The Death of Distance***,[1] postulated a set of trends in the new communication environment which will influence the way we live, work and play. Some of the trends, she anticipates, have a direct relevance to our discussion. These include:

- **The death of distance:** The cost of communication will not be determined by distance even in the most regulated environments. Reaching out to students through the electronic highway will be determined more by the willingness of the educational providers to utilise the newer technologies than by fear of inaccessibility because of communication costs.
- **Cost of appliances** will continue to drop even as the computing capacity of the appliance increases. The cost of networked computers of the future should come down to the level of present-day televisions.
- **Location does not matter:** Providers of educational services can be located anywhere on earth and can reach the users of the educational service wherever they may be, providing there is a basic communication infrastructure. Even today, Indian students already have access to, say, courses from North America without having to be in North America. Similarly, courses from India can and should travel across the globe.
- **The size of the organisation** providing the educational service is not relevant; but the quality of the service. Small and specialised organisations can offer their products to large groups and be globally competitive.

[1] Cairncross, Frances. (1997). *The death of distance: how the communications revolution will change our lives*. Boston, MA : Harvard Business School Press. p. 303.

- **Content customisation:** Sophisticated pedagogy can facilitate individuals to customise their learning needs. Learning can become either a multi-channel or a mono-channel experience. The final authority on customisation will be the expected learning outcomes of the subject and the learning preference of the student.
- **People as the ultimate scarce resource:** The really difficult challenge for institutions will be to recruit people with the necessary skills to perform the tasks required as well as train and retrain those already in service to work in the new environment.
- **Emergence of globally used language:** The emergence of English as a dominant second language of science, technology, business, and international relations as well as education and training, will mean the availability of globally useable knowledge products. There will be an increase in the choice of educational and training courses.
- **Communities of cultures** can be developed. The opportunity to make available content in other languages to a larger and dispersed audience will be feasible. Declining costs and ease of communication tools will make available, the vehicle to disseminate other cultures and traditions.

8. Advocating the use of technology, especially one that propounds ***remote learning***, will require some fundamental changes in the current system. These changes will challenge institutions that provide the educational service; they will test user capability for such services and question governments' policies and regulations. The following may be important for serious consideration:

- The first challenge is the re-orientation of our **teachers and the pedagogy** they apply to their vocation. The fraternity still has to come to terms with a new type of learner and a learning environment that encourages the learner to be independent. Whether it is a radio or

television programme, print or web-based instruction, it is recognised that individuals are capable of self-learning if provided with cleverly and sensitively designed instruction, but are poorly equipped to utilise the technology, imaginatively and non-mechanically.

- The second challenge is to **change the nature and structure of our 'teaching' organisations**. The traditions of teaching and the views on learning have resulted in organisational structures that are almost and completely centred on faculty. From the design of the curriculum to its transformation into learning experience; from decisions relating to assessment of prior learning to elements of exit standards; from administrative arrangements to academic governance; and from delivery systems to learning schedules.
- The third challenge is to remove **the 'time' driven element** from today's schools, colleges and universities. These are ruled by time, prescribing when, in his/her life, a student can or is ready to learn and the length of time required for learning. A report of a task force to the International Council for Distance Education[2] recorded: *"The instructional paradigm, therefore, holds learning prisoner to time constraints applied by an arbitrary force or by the preferred work schedule of a faculty member. In the desired [new] learning paradigm, learning becomes the primary driving force and, since learning can occur at any time and at any place 24 hours every day, the constraints of time are removed.* The technologies allow those who provide education to break the rule of time.
- The fourth challenge is overcoming the perceptions and the fear of **faculty to the changing nature of their roles and values as well as the rewards** of the new learning environment. There is a real, though

[2] Hall, James W. (1996). ***The educational paradigm shift: Implications for ICDE and the distance learning community.*** **Report of the Task Force of The International Council for Distance Education Standing Committee of Presidents. Open Praxis. Vol. 2, 1996. p. 32.**

unfounded, fear on the part of faculty of losing total control of the teaching and learning environment. This fear manifests itself in many forms. Some teachers express anger at the perceived loss of academic freedom and others express disdain at the 'commoditisation' of knowledge; some express dismay at the loss of employment and others worry about the loss of quality. Learner centrality in the educational environment does pose enormous challenges to the teacher. It requires pedagogical skills, especially in a technology-mediated environment which many of today's teachers are either inadequate in or totally lacking. Serious steps have to b[illegible]n to reduce the anxiety of teachers and alienating them from a development that is so crucial to academe and its survival.

- The fifth challenge is the **appropriateness of the curriculum**. Providers of educational services, whether of the formal or informal kind, cannot continue to behave as though their services and the knowledge products that they develop have little relevance to the world of work and living. The real world has been going through a dramatic change – learning and training are needed by people who will have to function in a globalised economy and the information age. These learners need to understand themselves through an understanding of the world (UNESCO's Delors Commission)[1], and should have the following skills:
  - *Communication skills* to work in a multicultural environment;
  - *Problem solving*: that requires the ability to frame problems, to ask the right questions and to apply the information technologies to solve them;

[1] Delors, Jacques (Commission Chair). (1996). *Learning, the treasure within: Report to UNESCO of the International Commission on Education for the Twenty-First Century*. Paris, France : UNESCO.

- *Working in teams*: made up of individuals with different backgrounds and cultures. Part of these skills will also include skills of leadership and negotiating and the ability to collaborate; and
- *Self-learning skills*: to be a lifelong learner would entail identifying what needs to be learnt and how to acquire that learning.

- The last in my list of challenges has to be the **access to technology** (telephone, television, radio, Internet) by learners. Even as we near the end of the century, some 500 million people may not have made their first telephone call let alone use the Internet. Most of the non-users are found in Sub-Saharan Africa, South Asia and Latin America. In her book, "The Death of Distance", Frances Cairncross[4] quoted an International Telecommunications Union report, which stated that in some African nations (Sierra Leone, Uganda, Zimbabwe), the number of people has been increasing faster than the number of telephone lines. While in the short-term, this seems to be a big impediment, the longer-term view, by all accounts, appears to be promising.

9. However, the high level of scepticism that is being encountered among academic circles around the world is not promising. There is a certain fear that the use of technology and the promotion of networked learning will lower the value of the educational experience, erode quality irreparably, diminish jobs and job opportunities, eliminate academic freedom and inquiry and demean scholarship. This scepticism coupled with fear has led, in some cases, to campus unrest and, in others, from outright hostility to experimentation, innovation and application. Change has never been achieved without discomfort. Those vested with the leadership of our academic communities can only attempt to reduce the level of acrimony, encourage

[4] Cairncross, Frances. (1997). *The death of distance: how the communications revolution will change our lives*. Boston, MA : Harvard Business School Press. p. 303.

open debate and discussion and provide as many training and retraining opportunities as possible to facilitate this major cultural change.

10. Technology, whether it is print or multimedia, does not teach; the techniques we adopt simply enable the delivery of teaching from narrow to mass catchments, and simultaneously shift the responsibility of learning away from the teacher to the learner. In the process, it transforms the relationship between teachers and learners. While we are entering the era where multimedia and hypermedia are bringing together, under one umbrella, the essence of print, audio and video signals, computer-assisted instruction, conference and group learning, at the heart of the teaching and learning transaction will be institutions and teachers. Our challenge is to create pedagogies of learning within which modes of delivery will contribute to effective learning. Before the arrival of the newer technologies, communities of distance educators around the world have been at the forefront of conducting changes in the educational environment. The circumstances under which practises have been developed, took into account the requirements of learners who used distance education and also needed:

- **Increased and flexible access to information** (isolated learners, preoccupied with other demands of living, require a variety of channels to access information on both academic and administrative matters);
- **Increased and flexible opportunities for interaction between mentors and peers** (freedom from time-tabled environments to conduct their learning);
- **Increased student time on tasks** (pacing the learning through devices that set tasks and deadlines for judicious absorption of information, skills or knowledge and completion of learning);
- **Opportunities to control their pace of learning**;

- **Learning that is relevant** to their daily lives (curriculum that is appropriate and sensitively transformed into learning experience);
- **Greater response to their individual circumstances** (mass education does not necessarily have to dehumanise the learning process); and
- **Regular and sensitive encouragement** to continue their learning (counselling for success).

11. As the forces surrounding the educational environment impel educational institutions to move away from being elitist, exclusively high-cost, campus-based and faculty-centred to one where the focus is the learner, access is mass, cost is low and the world is the campus, some fundamental shifts in the methods of teaching and learning, will have to take place. Accompanying these shifts will be the legitimate concerns about the quality of the venture. This is especially so in societies that have traditionally held education in high regard. Those of us who ventured into distance education between the mid-sixties and seventies will recollect, with pain, the stigma of the commercial correspondence schools culture that we inherited and which has taken the better part of the last 30 years to leave behind. On the basis of these three decades, let me briefly reflect on a few aspects of quality that we need to remind ourselves, even as the fascination for remote delivery of education becomes increasingly popular.

12. By deliberate design, practitioners of distance education have been instrumental in making some fundamental changes to long-held beliefs about where, when and how teaching and learning should take place. The critical issue is not where the students are located, but whether they can interact with a teacher or teaching programmes. Bringing about the desired levels of interaction between students, teachers and programmes will require subscribing to a list of good

principles. Many of you know these principles, but in the context of this keynote, let me reflect a little:

- **Good practise recognises the need for students to be well informed** about the courses that are available to them. Courses of study vary in many aspects even within a programme. Well-designed courses should be transparent before students enrol; details such as aims, objectives, course synopsis, the position of the course in a programme, expected quantum of work, tasks expected of students and the criteria that will be used in recognising completion of the course. Students need to make adjustments and preparations before the course begins;
- **Teacher – learner contact** is an essential part of a good educational environment. These occasions are not only good for motivating learners but also helpful in the context of overcoming learning problems. Learners are also able to use these occasions to measure their value systems about their studies and their future;
- **Active learning is healthy**: Students do not learn much from memorising facts and reproducing set answers; they derive greater benefits by being active in their learning. Talking, listening, observing, discussing, writing and relating their experiences and applying them in the context of their lessons are all part of an active learning process. Good practise in distance teaching does this effectively;
- **Peer support in learning** is highly beneficial. Sharing one's ideas and responding to the ideas of others improve thinking and increase understanding. Learning can improve if it is a team effort rather than a collection of solo performances. Study centre facilities provide valuable opportunities for peer-supported learning;

- **Feedback and encouragement**: Having an idea of what you know and what you do not, can be a focus for future learning. Regular feedback on their performance helps students learn better and more seriously;
- **Paced learning**: Using time effectively is critical for students; what this means to teaching is a clear understanding of appropriate pacing of the learning through tools such as assignments, tutorials, broadcast programmes, computers, conferencing, etc.; and
- **Learning pathways** must be mapped to facilitate different styles of learning.

13. Apart from good practise, which must be a vital consideration for the delivery of distance education, there are three other aspects of distance and open learning that are crucial to its good health. These are:

- **Access:** Supporters of open learning will claim that their educational mission is to provide access and equality of opportunity for learning, especially to individuals and groups who have been denied this before. As has been argued before, success in providing access is not a sufficient condition for claiming greater opportunity. 'Equality of opportunity is a matter of outcomes, not merely resource availability;' in other words, providing access is merely a starting point and equality can only be achieved if the people provided with such opportunities are assisted in achieving their goals.
- **Cost considerations**: Cost-efficiency and effectiveness of open education systems are overriding concerns for all of us. These considerations have a major impact on policy issues and any measurement of the quality of
a distance education system will have to take account of costs and benefits.

- **Infrastructure**: Delivering education to students off-campus needs infrastructure that is supportive of the teaching and learning environment. This infrastructure should have, among other items, the following essentials:
  - Those delivering content must have the **skills to use teaching methods that are resource-based;**
  - Such **teachers must be trained and provided with the technology** to perform of their tasks;
  - Adequate provision for **students to have access to the emerging communications and information technologies;**
  - Management reconfigures institutional resources and **invests them in the production of knowledge products** and the pathways to deliver the products; and
  - Management prepares itself to **cope with a diverse make-up of its students, their goals** and the context within which they learn.

14. Finally, even as the practise of open, flexible and remote learning moves from the margins of educational practises to centre stage, its full potential of contributing to national development, equalising opportunities for all and drastically changing the nature of teaching and learning, still continue to be untapped. In another context, Bill Gates,[5] in his book, ***The Road Ahead***, reflected that " . . . *we are all beginning another great journey. We aren't sure where this one will lead us either, but again I am certain this revolution will touch even more lives and take us all further*". It seems to me that how much further we can go with the delivery of high-quality education is capped not by technology and even other resources, but by our own professionalism and imagination. Simply relying on present habits or knowledge of instruction and technologies will not be enough. We will be required to put in place, organisations and people who can deliver courses at any location chosen by the

[5] Gates, W. (1995). *The Road Ahead*. The Penguin Group, USA.

learner. We need partnerships and associations, which will work in a linked network of providers, thereby providing unlimited choices to the learner. We need new strategies for course development and certification. And we need arrangements that will link students among themselves; link students and tutors and tutors and tutors; we need a fresh look at our curriculum and we need a curriculum that is dynamic – not one that confines learners to fixed points, but one that is seamless and open. I am told that we have the knowledge, experience and skill to do them. More crucially, we also have today, the technology to enable us to achieve these ideals. What is needed is the vision to make them a reality.